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Production Screen Tester

Part No. 810-00-1

Instruction Manual

Updated 3/10/2014
Ver. 1.0

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Intro

The flow-back characteristics of drill-in fluids are critical to the productivity of a well. If the fluid plugs the production screen, it will not only slow down production, but it could also lead to screen erosion and costly remediation.

The PST is designed to test flow-back of completion fluids on the rig site. It is no longer necessary to ship fluid samples back to the lab and delay the completion operation for days or weeks. Field fluids can be tested in real time with samples of the actual production screen being used down hole.

The PST now makes it possible to determine if the fluid remaining in the annulus will flow back through the production screen.

Description

The Production Screen Tester is similar to the standard API filter press both in appearance and operation. The user assembles a test cell with a sample of the production screen at the bottom. After filling the cell with fluid, he applies pressure and opens a valve at the bottom. The test will very quickly show whether the screen and fluid are compatible, or if plugging is a possibility. And the apparatus is simple enough that new screen samples can be installed and tested quickly and easily.

Specifications

Pressure Source: CO_2
Cell Size: 3" (7.8) ID × 10.9" (27.6 cm) Long
Sample Volume: 1,000 mL
Screen Size: 1.9" (50 mm) Diameter and 2.5" (63.5 mm) Diameter
Size: 11.5" × 8" × 27" (29 × 20 × 69 cm)
Weight: 24 lb (10.9 kg)

Components

#120-60-30	LP SS Tubing, 2" × ¼"
#141-05	Neoprene Gasket; Qty. 2
#141-06	Cell Pin; Qty. 2
#141-09	Threaded Insert W/Set Screw
#141-10	T-screw
#141-22	Felt Filter
#142-00	CO_2 Pressuring Assembly With Top Cap
#153-78	¼" Polyurethane (Flex) Tubing
#170-13	O-ring Nitrile
#810-00-002	Bottom Cap Assembly
#810-00-003	Cell Body
#810-00-005	O-ring Nitrile
#810-00-006	Cap Screen
#810-00-007	Bottom Cup Insert
#810-00-020	Plastic Main Insert
#810-00-021	Thick Spacer Ring
#810-00-022	Thin Spacer Ring; Qty. 2

Optional:

#810-00-010	Advanced Screen Holder Assembly
#810-00-010A	Advanced Screen Holder
#810-00-010B	Thick Spacer
#810-00-010C	Thin Spacer; Qty. 2
#810-00-010D	Locking Ring
#810-00-020-1	Screen Tester Main Insert (SS 303)

Tools:

#120-50-076	9/16" Combination wrench; Qty. 2
#120-58-07	5/64"Allen wrench for Threaded Insert for T-Screw
#170-27	5/32" Allen wrench for Base Cap Set Screws

Safety

Carbon Dioxide gas is normally supplied in small bulbs or cartridges, which contain approximately 900 PSI (6,206 kPa) pressure when new. Because they are highly portable, they are usually used in field operations. These bulbs should not be exposed to high heat (50°C/120°F) as they can explode if over heated.

Never transport CO_2 bulbs or cartridges by airplane without proper packaging. Cabin depressurization could cause them to explode.

Quick Start

1. Measure the initial fluid temperature.
2. Assemble the test cell.
3. Pour the fluid into the test cell.
4. Place the top cap on the cell body.
5. Place the cell into the frame and secure it with the T-screw.
6. Apply pressure and start the timer.
7. Record temperature, time, and fluid volume.
8. Release the pressure.
9. Disassemble the cell and clean all components.

Operation

1. Before beginning a test, make sure each part of the cell is clean and dry, particularly the screen. Examine the gaskets for distortion and wear. Make sure the screen is free of sharp edges, burrs, or tears.

2. Measure the initial temperature of the fluid sample and record it for later analysis.

3. Assemble the test cell (to assemble the cap screens see 13 and 14):

   a. Assemble the Bottom Cap.

      i. Place a gasket in the inside groove in the bottom cap.

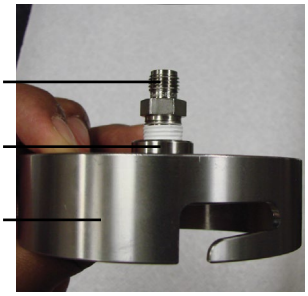
Bottom Cap with Gasket

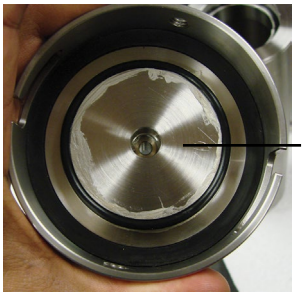
      ii. Apply lubrication to the inner bottom cap (#810-00-007) and place an o-ring (#170-13) in the designated seat.

Bottom Cup Insert

Bottom Cup Insert with O-ring

      iii. Place the bottom cup insert into the bottom cap. Screw the fitting (#130-78-045) into the bottom of the bottom cup insert.





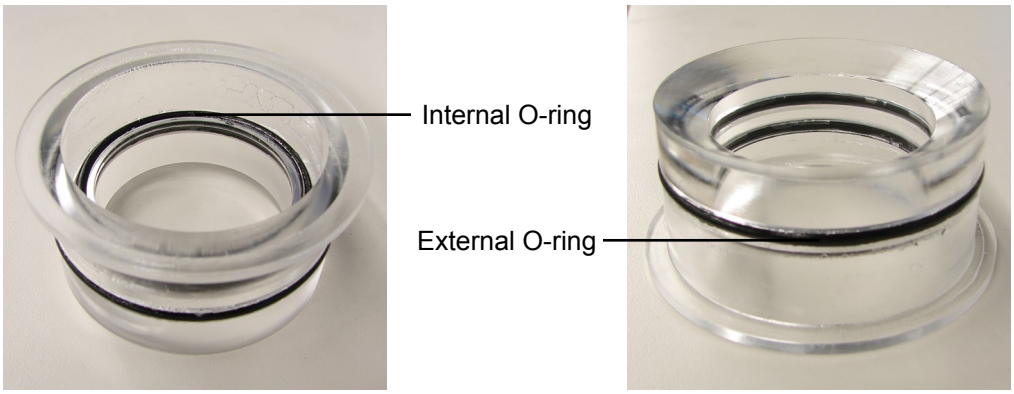
Shut Off Valve Assembly Installation

iv. Use two 9/16" wrenches to install the Shut Off Valve Assembly (#120-910-070) to the NPT connector on the inner cap as shown above.

b. Assemble the Main Insert (Plastic) (#810-00-020).

i. Insert an o-ring (#170-13) into the internal portion of the insert and lubricate the o-ring as shown below (left).

ii. Install the external o-ring (#810-00-005) and lubricate the external portion of the insert as shown below (right).



iii. Place the Insert into the bottom side of the cell and press down to sit flush inside the cell.

c. Assemble the cap screen.

i. Insert spacers and screens as needed.

ii. Place an o-ring (#810-00-004) into the plastic insert.

iii. Insert the cap screen (#810-00-006) as shown below.

i. Spacer Insert

ii. O-ring Insert

iii. Cap Screen Insert

Cap Screen Installed

d. Place the assembled bottom cap onto the cell and turn it to lock it into place. Use a 5/32" allen wrench to tighten the set screws which secure the cell cap to the cell.

e. Turn the cell assembly right side up.

4. Pour the freshly stirred sample fluid into the cell, leaving 0.5" (13 mm) of empty space at the top.

5. Place a rubber gasket inside the top cap. Make sure it is seated all the way around the cap. Then place the top cap onto the top of the cell body.

6. Place the entire cell into the frame and secure the cell with the T-screw.

Top Cap with Gasket

7. Place a clean, dry 1,000 mL Beaker under the filtrate tube.

8. With the regulator closed and the relief valve pushed in, place a CO_2 bulb into the sleeve and screw it onto the pressure assembly. This will puncture the bulb and release the pressure.

9. Turn the regulator T-screw clockwise to adjust the pressure. Start the timer.

10. At the end of the test, back off the regulator and record the following:

    a. If the fluid plugs the screen, record the time and the volume of fluid collected.

    b. If the fluid does not plug the screen, record the time required for all the fluid to flow through the screen.

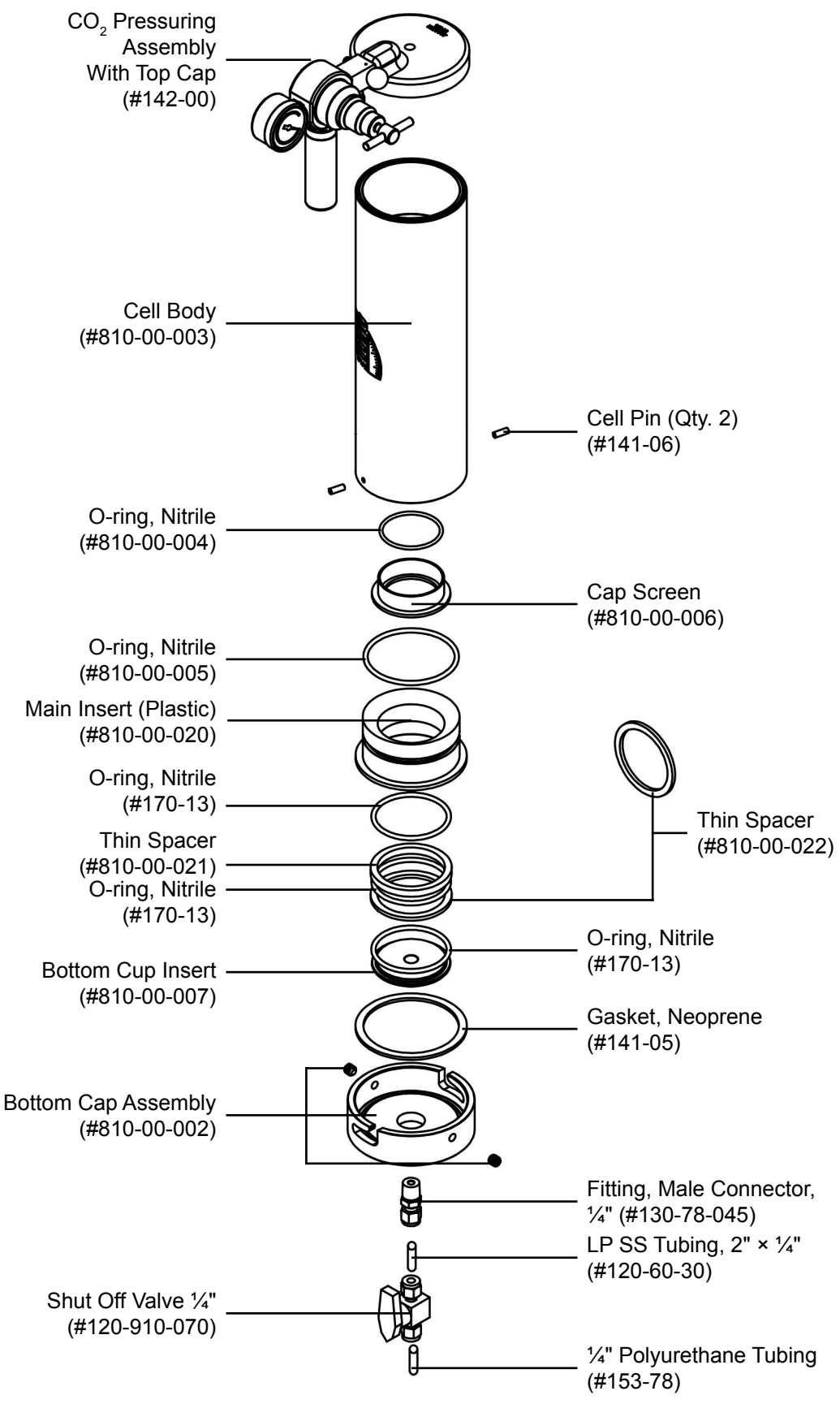
11. Pull the relief valve out to release any remaining pressure.

12. Remove the cell from the frame and disassemble it. Discard any remaining fluid.

13. After each test, disassemble the test cell and thoroughly clean all surfaces with soap and water. Make sure all parts are clean and dry before storing the unit.

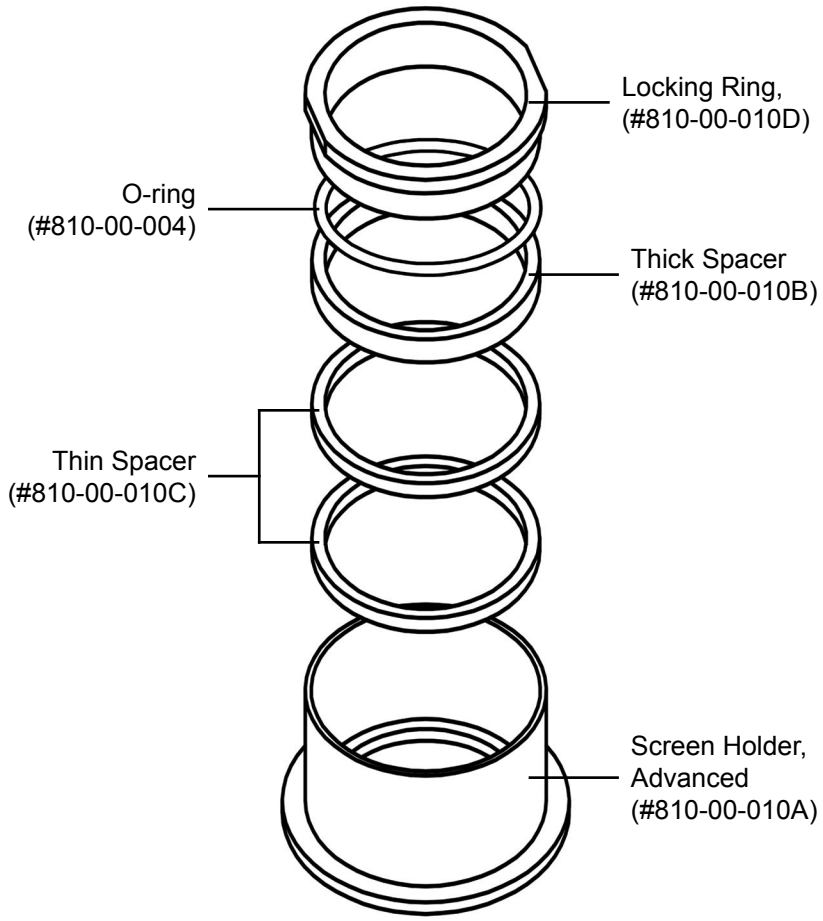
Diagram

Cell Assembly



Diagram

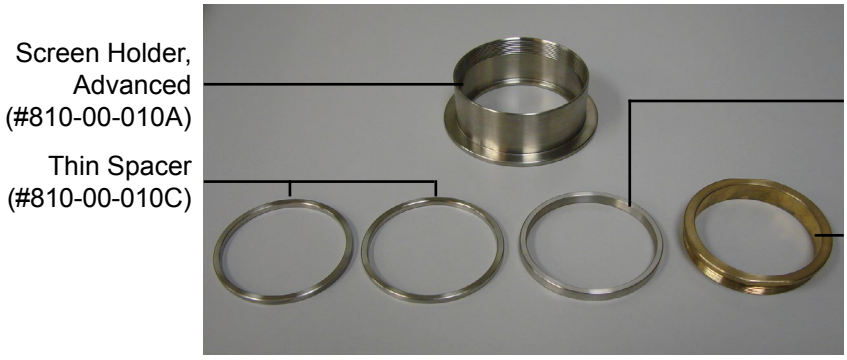
Advanced Screen Holder Assembly (Optional)



Appendix

Advanced Screen Holder Assembly (Optional)

The Advanced Screen Holder (#810-00-010) is an optional screen assembly which includes spacers to accommodate multiple screens of varying thickness up to ½" and 50 mm in diameter. Not all screens will require the use of every spacer. The thickness of screens can be different which may eliminate the use of other spacers.



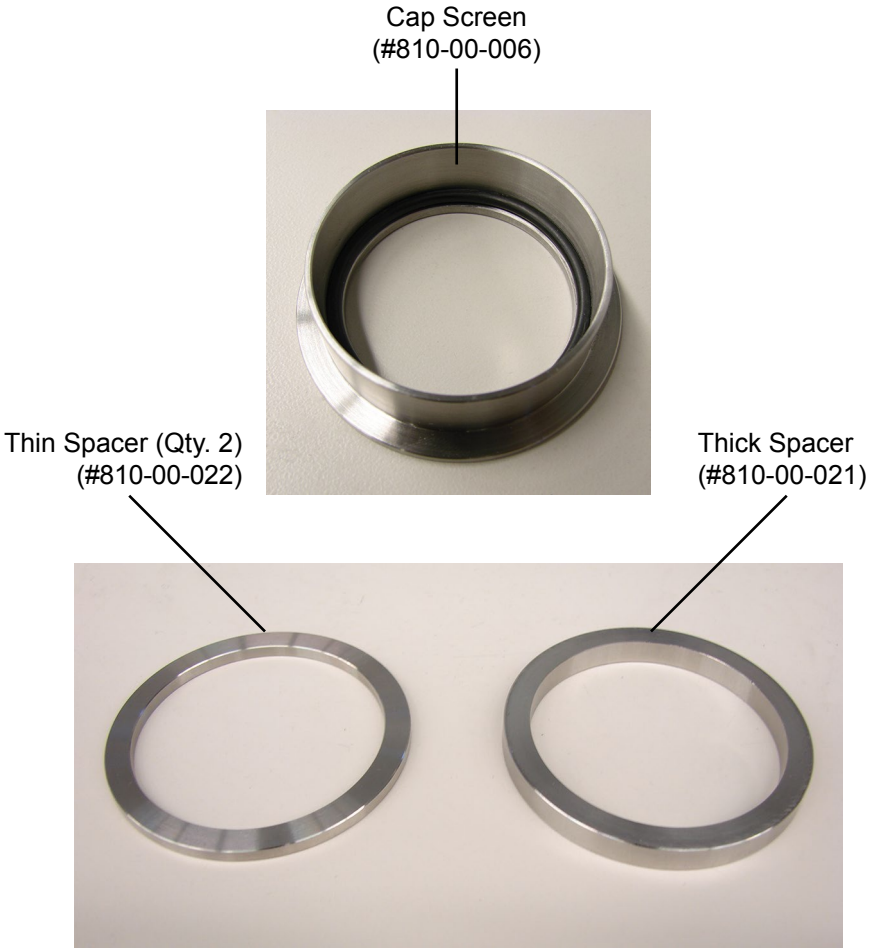
Advanced Screen Holder Assembly (#810-00-010)

1. Place spacers as needed into holder assembly.
2. Place screen into screen holder and more spacers if needed.
3. Place an o-ring (#810-00-004) into screen holder.
4. Secure screen assembly with Locking Ring (#810-00-010D)
5. Place assembled screen holder into insert.

Appendix

Cap Screen Assembly

The Cap Screen Assembly is an optional screen assembly which includes spacers to accommodate multiple screens of varying thickness up to ⅜" and 2.5" in diameter. Not all screens will require the use of every spacer. The thickness of screens can be different which may eliminate the use of other spacers.



Cap Screen Assembly

1. Place spacers as needed into holder assembly.
2. Place screen into screen holder and more spacers if needed.
3. Place an o-ring (#810-00-004) into screen holder.
4. Place assembled screen holder into insert.

Warranty and Return Policy

Warranty:

OFI Testing Equipment, Inc. (OFITE) warrants that the products shall be free from liens and defects in title, and shall conform in all respects to the terms of the sales order and the specifications applicable to the products. All products shall be furnished subject to OFITE's standard manufacturing variations and practices. Unless the warranty period is otherwise extended in writing, the following warranty shall apply: if, at any time prior to twelve (12) months from the date of invoice, the products, or any part thereof, do not conform to these warranties or to the specifications applicable thereto, and OFITE is so notified in writing upon discovery, OFITE shall promptly repair or replace the defective products. Notwithstanding the foregoing, OFITE's warranty obligations shall not extend to any use by the buyer of the products in conditions more severe than OFITE's recommendations, nor to any defects which were visually observable by the buyer but which are not promptly brought to OFITE's attention.

In the event that the buyer has purchased installation and commissioning services on applicable products, the above warranty shall extend for an additional period of twelve (12) months from the date of the original warranty expiration for such products.

In the event that OFITE is requested to provide customized research and development for the buyer, OFITE shall use its best efforts but makes no guarantees to the buyer that any products will be provided.

OFITE makes no other warranties or guarantees to the buyer, either express or implied, and the warranties provided in this clause shall be exclusive of any other warranties including ANY IMPLIED OR STATUTORY WARRANTIES OF FITNESS FOR PURPOSE, MERCHANTABILITY, AND OTHER STATUTORY REMEDIES WHICH ARE WAIVED.

This limited warranty does not cover any losses or damages that occur as a result of:

- Improper installation or maintenance of the products
- Misuse
- Neglect
- Adjustment by non-authorized sources
- Improper environment
- Excessive or inadequate heating or air conditioning or electrical power failures, surges, or other irregularities
- Equipment, products, or material not manufactured by OFITE
- Firmware or hardware that have been modified or altered by a third party
- Consumable parts (bearings, accessories, etc.)

Returns and Repairs:

Items being returned must be carefully packaged to prevent damage in shipment and insured against possible damage or loss. OFITE will not be responsible for equipment damaged due to insufficient packaging.

Any non-defective items returned to OFITE within ninety (90) days of invoice are subject to a 15% restocking fee. Items returned must be received by OFITE in original condition for it to be accepted. Reagents and special order items will not be accepted for return or refund.

OFITE employs experienced personnel to service and repair equipment manufactured by us, as well as other companies. To help expedite the repair process, please include a repair form with all equipment sent to OFITE for repair. Be sure to include your name, company name, phone number, email address, detailed description of work to be done, purchase order number, and a shipping address for returning the equipment. All repairs performed as "repair as needed" are subject to the ninety (90) day limited warranty. All "Certified Repairs" are subject to the twelve (12) month limited warranty.

Returns and potential warranty repairs require a Return Material Authorization (RMA) number. An RMA form is available from your sales or service representative.

Please ship all equipment (with the RMA number for returns or warranty repairs) to the following address:

OFI Testing Equipment, Inc.
Attn: Repair Department
11302 Steeplecrest Dr.
Houston, TX 77065
USA

OFITE also offers competitive service contracts for repairing and/or maintaining your lab equipment, including equipment from other manufacturers. For more information about our technical support and repair services, please contact techservice@ofite.com.